

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. 09/981,718 Confirmation No.: 6058
Applicant(s): JURGEN MEYER, ET AL.
Filed: OCTOBER 19, 2001
TC/A.U. 1714
Examiner: Edward J. Cain
Title: FUNCTIONALIZED, STRUCTURALLY MODIFIED SILICAS

Docket No.: 032301.224
Customer No.: 25461

MAIL STOP AMENDMENT - FEE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR RECONSIDERATION

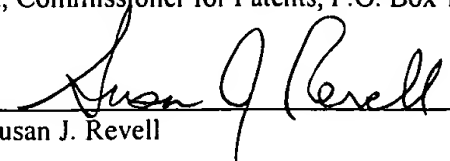
Reconsideration is respectfully requested of the Official Action of October 6, 2004, relating to the above-identified application. A one-month request for extension of time, together with the associated fee, is filed herewith.

The only rejection that is outstanding in the application is the rejection of Claims 1 and 3 to 7 under 35 U.S.C. § 102(e) as anticipated by the *Eck* patent, U.S. 6,197,863. This rejection is traversed and reconsideration is respectfully requested. The Official Action relies on the disclosure in *Eck* showing polymeric compositions containing a pyrogenic silica modified with surface functionalizing agents. The Official Action notes that these agents include methacryloxypropylsilyl and glycidylloxypropylsilyl functional groups.

The Official Action then points out that the silicas taught as suitable have aggregate sizes of 100 to 1,000 nm and surface areas of 20-400 m²/g. The Official Action admits that the

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reference fails to explicitly recite the primary particle size, the tamped density, the pH, the carbon content and the DBP number. The Official Action alleges that these values would have been inherent to the silica disclosed in the reference.

Applicants invite attention to the fact that the claimed silica products are structurally modified as pointed out in line 1 of the preamble of the claim. This is a significant feature of the invention. Reference is made to the description of what is meant by “destructuring” found in the prior art such as the *Nargiello, et al.*, patent, U.S. 6,193,795 (copy enclosed). Attention is invited to the discussion of “structure” in *Nargiello, et al.*, in col. 1, line 39, citing the Encyclopaedia of Chemical Technology, Vol. 4, pg. 638 by Kirk Othmer. Further evidence of the fact that “destructuring” and the “structure” of finely divided fillers such as silica is known in the art is shown by the *Hartmann, et al.*, patent, U.S. 5,959,005, (copy enclosed, assigned to the same assignee as the present application). Destructuring of fillers such as silica is brought about by mechanical action as noted in the *Hartmann* patent, in column 1 at line 37. As pointed out by the *Nargiello, et al.*, patent, structure of a material such as silica is measured by the DBP absorption. See col. 1, beginning at line 39. Note the disclosure beginning in line 53 that providing low structure or a destructured product allows for higher loadings of fillers in formulations whereby excessive viscosity build-up is drastically reduced. This enables improvement in extrusion rates and mechanical properties. Therefore, it may be seen that the term “structurally modified” has a meaning well understood in the prior art and distinguishes a filler such as silica which has been structurally modified or “destructured” from a silica which has not been subjected to the destructuring operation.

It is immediately apparent from the *Eck* patent that this silica disclosed therein is not a “structurally modified” silica nor is there anything in the *Eck* patent which suggests that the silica has been destructured as measured by the DBP number.

Applicants, therefore, respectfully submit that a person skilled in the art would not understand the reference as disclosing a functionalized structurally modified silica characterized by the physical chemical properties recited in the claims. Furthermore, since the product of the present invention is structurally modified, there can be no presumption that the resulting properties of the product shown in the prior art would necessarily be the same as the properties defined in Claim 1. It should be noted that only one property of the *Eck* silica, namely the BET surface area, overlaps with the BET surface area of the structurally modified silica of the present invention. The reference fails to disclose the primary particle size, tamped density, pH, carbon content or the DBP number. Consequently, applicants respectfully submit that the reference fails to anticipate the claimed invention. There are an insufficient number of properties in common as disclosed in the reference as compared to the claimed invention whereby it could be concluded that the product of the reference inherently possesses all of the properties defined by the present claims. Applicants therefore submit that there is insufficient basis to allege that the reference anticipates the claimed invention.

With regard to the process, it should be noted that Claim 4 specifies spraying the silica first with water or diluted acid and then with the surface modification reagent or a mixture of several surface modification reagents in a mixing vessel, intensively mixing the silica and the reagent then optionally remixing the silica for 15 to 30 minutes and then heat treating at a

temperature of 100 to 400°C over a period of 1 to 6 hours to produce a functionalized silica, then destructuring or compacting the silica and optionally regrinding the silica in a mill. The *Eck* reference does not disclose that the silica is destructured during the preparation nor does the reference disclose that the resulting silica will show a superior scratch resistance. Attention is invited to the comparative data in the application such as on page 6. This data shows that a nonstructurally modified silica (Aerosil R8200) when mixed with a binder results in a composition which has a very much higher viscosity than does the product made with the silica which has been destructured according to example 1. Thus, the data in the application shows that the viscosity, when working with the destructured silica, is in a completely different range of magnitude than the silica with the same binder which has not been destructured. The scratch resistance of the compositions of the present invention is also superior as shown in table 3 on page 7 of the application. Compositions of the present invention retain a greater reflectance value after scratching which means that they have greater scratching resistance.

Thus, in summary, the present record fails to establish that the *Eck* reference anticipates all of the features that are set forth in the present application. Furthermore, it has not been established that the composition shown in the reference would inherently result in the properties defined in the present claims.

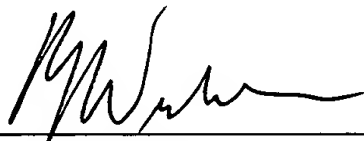
Differences have been pointed out between the process by which the present products are prepared as compared to the products shown in the reference. The comparative data shows that there is a very substantial difference in properties between coating compositions prepared with a destructured silica as compared with one that has a conventional non-destructured silica.

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Resp. to Office Action of Oct. 6, 2005

Accordingly, applicants respectfully submit that the *Eck* reference fails to anticipate the claimed invention and, therefore, the rejection based thereon should be withdrawn.

Respectfully submitted,

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